DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 30 August 2010 has been entered.

Claim Objections

2. Claim 4 is objected to because of the following informalities: the phrase "the other one" in Line 4 should read "another of the electron electrode and the hole electrode" for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 establishes a condition which directly conflictions with the requirements of claim 1. Specifically, claim 8 recites "wherein said channel comprises at least one material..." in

Line 2. The usage of the phrase "at least one material" conflicts with the requirements of claim 1, which limits the channel material to a single thin layer of a single polycrystalline small molecule material" in Lines 3-4. Correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 12, 15-16, 21-22 and 24-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Bao (`207).

a. Regarding claim 1, Bao teaches an electroluminescence generating device (see Figs. 23-24) comprising a channel (Element 91) of a single thin layer of a single polycrystalline small molecule layer (see Figs. 20A-20F, for example; Col. 2, Lines 29-31; Col. 6, Lines 45-67; Col. 8, Lines 22-27 and 50-62), a source electron electrode (Element 92), said electron electrode being in contact and on top of said channel said electron electrode being able to inject electrons in said channel layer, a drain hole electrode (Element 93), said hole electrode being spaced apart from said electron electrode, said hole electrode being in contact and on top of said channel and said hole electrode being able to inject holes into said channel, and a control electrode (Element

94) positioned on said first side of the channel (top) and a second side of the channel (bottom). Regarding the language of "whereby light emission of said electroluminescent generating device can be acquired by applying an electrical potential between said electron electrode and said hole electrode" the functional descriptions and manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. The recitation of "whereby light emission of said electroluminescent generating device can be acquired by applying an electrical potential between said electron electrode and said hole electrode" is an intended use functional language which does not differentiate the claimed device from the prior art device, which teaches the structure of the claim as described above. Additionally, Bao teaches the functionality of the generating light emission by applying an electrical potential between the electron electrode and the hole electrode (see Element 96; Col. 2, Lines 22-28; Col. 9, Lines 16-17; Col. 10, Lines 5-22).

b. Regarding claim 2, Bao teaches a dielectric layer (insulating layer in Fig. 23) between the channel and the control electrode.

c. Regarding claim 3, Bao teaches that the dielectric layer is, for example, polyimide (see Col. 5, Lines 12-14).

d. Regarding claim 12, Bao teaches that the hole electrode and the electron electrode are spaced apart by, for example, 5 nm (see Col. 6, Liens 1-2).

e. Regarding claim 15, Bao teaches that the control electrode is an injection control electrode being positioned on the second side of the channel (see Fig. 23 with Element 94 on bottom). Regarding the language of "injection control electrode" and "whereby the application of an electrical potential difference between said control electrode and said hole electrode or electron electrode facilitates the injection of charge carriers into the channel" the functional descriptions and manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. The recitation of "injection control electrode" and "whereby the application of an electrical potential difference between said control electrode and said hole electrode or electron electrode facilitates the injection of charge carriers into the channel" is an intended use functional language which does not differentiate the claimed device from the prior art device, which teaches the structure of the claim as described above. Additionally, Bao teaches such functionality since the control electrode is a gate electrode.

f. Regarding claim 16, Bao teaches that the control electrode is an injection control electrode being positioned on the second side of the channel (see Fig. 23 with Element 94 on bottom). Regarding the language of "current control electrode" and "whereby the application of an electrical potential difference between said control electrode and said electron and/or hole electrode allows to control the current of at least one type of charge carriers" the functional descriptions and manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. The recitation of "current control electrode" and "whereby the application of an electrical potential difference between said control electrode and said electron and/or hole electrode allows to control the current of at least one type of charge carriers" is an intended use functional language which does not differentiate the claimed device from the prior art device, which teaches the structure of the claim as described above. Additionally, Bao teaches such functionality since the control electrode is a gate electrode.

g. Regarding claim 21, Bao teaches a flexible or rigid substrate (see Col. 4, Lines 22-25).

h. Regarding claims 22 and 24-27, the entirety of the language of these claims are directed towards the process of making the electroluminescence generating device of claim 1. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wethheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al., 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference. As such, the language claims 22 and 24-27 only requires the electroluminescence generating device of claim 1, which does not distinguish the invention from the prior art, which teaches the structure as claimed.

i. Regarding claim 28, Bao teaches a method for generating electroluminescence using the device of claim 1 by recombination of electrons and hole injected into the channel from the electron electrode and the hole electrode (see Element 96 along with Col. 2, Lines 22-28; Col. 9, Lines 16-17; Col. 10, Lines 5-22, for example).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bao (`207) in view of Christensen (`718).

Bao teaches the device of claim 1, but does not teach that the electron electrode and hole electrode are formed of at least one different material than another of the electron electrode and hole electrode.

However, Christensen teaches an electroluminescence generating device comprising a channel (Element 15), a source/drain electron electrode (Element 13), said electron electrode being in contact with said channel said electron electrode being able to inject electrons in said channel layer, a source/drain hole electrode (Element 14), said hole electrode being spaced apart from said electron electrode, said hole electrode being in contact with said channel and said hole electrode being able to inject holes into said channel, and a control electrode (Element 18) positioned on said first side of the channel. The electron electrode and hole electrode comprise at least one material which is not comprised in another of the electron and hole electrode (see Col. 4, Lines 31-33) with the electron electrode comprising an element of Al as Li_3Al_2 (see Col. 4, Lines 31-32) and the hole electrode comprising an element of Cr as Cr_3Si (see Col. 4, Lines 32-33). It would have been obvious to one of ordinary skill in the art at the time the invention

was made to form the electron and hole electrodes of Bao with the different materials taught by Christensen in order to facilitate efficient light emission from the light emitting channel due to the low and different work functions of the Li_3Al_2 and Cr_3Si materials (see Col. 4, Lines 58-60 and Col. 5, Lines 26-31).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bao (`207) in view of Marks (Europhys. Lett., Vol. 32).

Although Bao contemplates the properties of sexithiophene among the devices of claim 1 (Col. 8, Lines 37-40), there is no explicit teaching of actually using this material in the device.

However, Marks teaches using polycrystalline small molecule materials having a grain size, such as sexithiophene, as a single material electroluminescent layer (see Page 524, Line 1, at least). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use polycrystalline small molecule materials, such as sexithiophene, as taught by Marks for the single material electroluminescent and polycrystalline layer of Bao. One would have been motivated to do so since Marks teaches that the polycrystalline material with a grain size allow for the emission of polarized light (see Abstract, Lines 3-5). Additionally, these materials having polarized light emission are taught by marks to have the advantage of allowing optimization of devices properties, including charge mobility, polarization, and the angular distribution of light emission (Page 527, Lines 34-35). Such applications are particularly well suited for laser applications, such as that of Bao. Furthermore, it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65

USPQ 297 (1945). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

10. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bao (`207) in view of Brazis, Jr. (`120).

Bao teaches the device of claim 1, but Bao does not teach the specific configuration for the electron and hole electrodes being digitated structures with regular repetition of a basic finger structure with the electron and hole electrodes alternating each other with two characteristic in-plane distances P and R therebetween being equal.

However, Brazis, Jr. teaches an organic semiconductor transistor with an electron electrode (see Element 14 in Fig. 3) and a hole electrode (see Element 15 in Fig. 3) being digitated structures with regular repetition of a basic finger structure with the electron and hole electrodes alternating each other with two characteristic in-plane distances P and R therebetween being equal (see Fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration set forth by Brazis, Jr. for the electron and hole electrodes of Bao. One would have been motivated to do so since Brazis, Jr. teaches that such a configuration is advantageous because such a configuration allows for wide channel widths over a small area to improve the current handling capabilities of the device (Para. 0010, 0014).

11. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bao (`207) in view of Kozlov (`828).

While Bao teaches a laser devices (see Figs. 23-24 along with associated text), Bao does not teach the confinement optical resonators/cavities and waveguiding layers associated with the generation of lasing in organic light emitting structures.

However, Kozlov teaches an organic light emitting laser (see Figures) using confinement optical resonators/cavities (Elements 111, 112, "t") and waveguiding layers (Elements 161 and 162)on the first and second side of the organic light emitting layers (Element 110). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the confinement optical resonators/cavities and waveguiding layers on the first and second side of the lasing channel of Bao as taught by Kozlov. One would have been motivated to do so since Kozlov teaches that these layers minimize waveguiding losses (see Col. 6, Liens 40-55) and form an optical cavity for resonation yielding (see Col. 3, Lines 37-42) a device with clear threshold in the output power, a well-defined laser beam, cavity modes and narrow emission spectrum (see Col. 3, Lines 17-19).

12. Claims 1-2, 4-6, 8, 21-22 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen (`718) in view of Necliudov (J. Appl. Phys., Vol. 88) in view of Marks (Europhys. Lett., Vol. 32).

j. Regarding claim 1, Christensen teaches an electroluminescence generating device comprising a channel (Element 15), a source/drain electron electrode (Element 13), said electron electrode being in contact with said channel said electron electrode being able to inject electrons in said channel layer, a source/drain hole electrode (Element 14), said

hole electrode being spaced apart from said electron electrode, said hole electrode being in contact with said channel and said hole electrode being able to inject holes into said channel, and a control electrode (Element 18) positioned on said first side of the channel. Regarding the language of "whereby light emission of said electroluminescent generating device can be acquired by applying an electrical potential between said electron electrode and said hole electrode" the functional descriptions and manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. The recitation of " whereby light emission of said electroluminescent generating device can be acquired by applying an electrical potential between said electron electrode and said hole electrode" is an intended use functional language which does not differentiate the claimed device from the prior art device, which teaches the structure of the claim as described above. Additionally, Christensen teaches the functionality of the generating light emission by applying an electrical potential between the electron electrode and the hole electrode (see Element 20 and Col. 4, Lines 40-60).

While Christensen teaches that the electron electrode and the hole electrode form an ohmic contact with the channel layer with these electrodes beside the channel, there is no teaching that the electron electrode and the hole electrode are positioned on top of the first side of said channel layer.

However, Necliudov teaches that forming the source/drain contacts on organic semiconductors are advantageously formed on top of the channel (see Fig. 1B and associated text). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the ohmic source/drain electron and hole electrodes of Christensen on top of the first side of the channel as taught by Necliudov. One would have been motivated to do so for a variety of reasons. Specifically, Necliudov teaches that the top contact source/drains form ohmic contacts to the channel without introducing nonlinearities (see Fig. 3 and associated text). Additionally, Necliudov teaches that the top contact source/drain configuration is the easiest to fabricate (Page 6594, Left Col., Line 19) and are superior over other designs (Page 6594, Left Col., Lines 20-21).

While Christensen teaches that the channel is a single thin layer of a single organic semiconductor material capable of carrying electrons and holes to facilitate light emission, there is no teaching of using a polycrystalline small molecule material, whereby said polycrystalline small molecule material has a crystal grain size.

However, Marks teaches using polycrystalline small molecule materials having a grain size, such as sexithiophene, as a single material electroluminescent layer (see Page 524, Line 1, at least). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use polycrystalline small molecule materials, such as sexithiophene, as taught by Marks for the single material electroluminescent layer of Christensen. One would have been motivated to do so since Marks teaches that the polycrystalline material with a grain size allow for the emission of polarized light (see Abstract, Lines 3-5). Additionally, these materials having polarized light emission are

taught by marks to have the advantage of allowing optimization of devices properties, including charge mobility, polarization, and the angular distribution of light emission (Page 527, Lines 34-35). Furthermore, it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

k. Regarding claim 2, Christensen teaches that a dielectric layer (Element 17) is between the channel and the control electrode.

l. Regarding claim 3, Christensen teaches that the electron electrode and hole electrode comprise at least one material which is not comprised in another of the electron and hole electrode (see Col. 4, Lines 31-33).

m. Regarding claim 5, Christensen teaches that the electron electrode comprises an element of Al (see Col. 4, Lines 31-32).

n. Regarding claim 6, Christensen teaches that the hole electrode comprises an element of Cr (see Col. 4, Lines 32-33).

o. Regarding claim 8, as already shown above, the device of Christensen in view of Marks teaches that the channel comprises sexithiophene.

p. Regarding claim 21, Christensen teaches a flexible or rigid substrate (Element 11; see Col. 4, Lines 27-28 and 61-63).

q. Regarding claims 22 and 24-27, the entirety of the language of these claims are directed towards the process of making the electroluminescence generating device of claim 1. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wethheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al., 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference. As such, the language claims 22 and 24-27 only requires the electroluminescence generating device of claim 1, which does not distinguish the invention from the prior art, which teaches the structure as claimed.

r. Regarding claim 28, Christensen teaches a method for generating electroluminescence using the device of claim 1 by recombination of electrons and hole injected into the channel from the electron electrode and the hole electrode (see Element 20 and Col. 4, Lines 40-60, for example).

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen (`718) in view of Necliudov (J. Appl. Phys., Vol. 88) in view of Marks (Europhys. Lett., Vol. 32) as applied to claim 1 above, and further in view of Rogers (Appl. Phys. Lett., Vol. 75; supplied with Office action dated 13 July 2009).

Christensen in view of Necliudov in view of Marks teaches the device of claim 1, but Christensen is silent regarding conventional details such as the separation distance between the electron and hole electrodes.

However, Rogers teaches forming an organic transistor with a separation distance between the electron and hole electrodes (source/drains) of, for example 100 nm or 0.1 microns (see Abstract; Page 1010, Left Col., Lines 28-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the distance between the electron and hole electrodes (source and drain) of Christensen to be small, such as the 100 nm or 0.1 microns of Rogers. One would have been motivated to do so since Rogers teaches that such small distances result in a device with low voltage and high current characteristics (see Abstract; Page 1010, Left Col., Lines 28-33; Page 1012, Right Col., Lines 25-29) making them even suitable for light emission circuitry.

14. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen (`718) in view of Necliudov (J. Appl. Phys., Vol. 88) in view of Marks (Europhys. Lett., Vol. 32) as applied to claim 1 above, and further in view of Brazis, Jr. (`120).

Christensen in view of Necliudov in view of Marks teaches the device of claim 1, but Christensen does not teach the specific configuration for the electron and hole electrodes being digitated structures with regular repetition of a basic finger structure with the electron and hole electrodes alternating each other with two characteristic in-plane distances P and R therebetween being equal.

However, Brazis, Jr. teaches an organic semiconductor transistor with an electron electrode (see Element 14 in Fig. 3) and a hole electrode (see Element 15 in Fig. 3) being digitated structures with regular repetition of a basic finger structure with the electron and hole electrodes alternating each other with two characteristic in-plane distances P and R therebetween being equal (see Fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration set forth by Brazis, Jr. for the electron and hole electrodes of Christensen. One would have been motivated to do so since Brazis, Jr. teaches that such a configuration is advantageous because such a configuration allows for wide channel widths over a small area to improve the current handling capabilities of the device (see Para. 0010 and 0014).

15. Claims 3 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen (`718) in view of Necliudov (J. Appl. Phys., Vol. 88) in view of Marks (Europhys. Lett., Vol. 32) as applied to claim 1 above, and further in view of Bao (`207).

s. Regarding claim 3, Christensen teaches a dielectric layer (Element 17) between the control electrode and channel, but is silent regarding the material.

However, Bao teaches using silicon oxide (SOG) or polyimide, as the gate dielectric material in light emitting field effect transistors (see Col. 5, Lines 9-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use silicon oxide or polyimide as taught by Bao for the gate dielectric of Christensen. One would have been motivated to do so since Bao teaches that these materials are suitable as gate dielectrics in organic field effect transistors applications and can be formed conveniently by spin-on techniques (see Col. 5, Lines 12-14, for example). It has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

t. Regarding claims 15 and 16, Christensen teaches that the control electrode is formed on the first side of the channel instead of the second side (see Fig. 1).

However, Bao teaches that the control electrode is an injection/current control electrode being positioned on the second side of the channel (see Fig. 23 with Element 94

on bottom and also bottom gate structures shown in Fig. 19, for example). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the control electrode of Christensen on the second side of the channel as taught by Bao. One would have been motivated to do since Bao teaches that the bottom gate configuration (second side of the channel) is advantageous due to simple processing, avoidance of hole processing conditions of etchants, cleaning agents and high temperature and provides inherent electrical isolation between adjacent devices in an integrated circuit (see Col. 3, Lines 2-8).

Regarding the language of "injection control electrode" and "whereby the application of an electrical potential difference between said control electrode and said hole electrode or electron electrode facilitates the injection of charge carriers into the channel" (claim 15) and "current control electrode" and "whereby the application of an electrical potential difference between said control electrode and said electron and/or hole electrode allows to control the current of at least one type of charge carriers" (claim 16) the functional descriptions and manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP § 2114. The recitation of "injection control electrode" and "whereby the application of an electrical potential difference between said control electrode and said hole electrode or electron electrode facilitates the injection of charge

carriers into the channel" and "current control electrode" and "whereby the application of an electrical potential difference between said control electrode and said electron and/or hole electrode allows to control the current of at least one type of charge carriers" are intended use functional language which does not differentiate the claimed device from the prior art device, which teaches the structure of the claim as described above. Additionally, Christensen and Bao teach such functionality since the control electrode is a gate electrode.

16. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen (`718) in view of Necliudov (J. Appl. Phys., Vol. 88) in view of Marks (Europhys. Lett., Vol. 32) as applied to claim 1 above, and further in view of Kozlov (`828).

While Christensen in view of Necliudov and Marks teaches polarized emission, there is no teaching of confinement optical resonators/cavities and waveguiding layers on the first and second side of the channel layer.

However, Kozlov teaches an organic light emitting laser (see Figures) using confinement optical resonators/cavities (Elements 111, 112, "t") and waveguiding layers (Elements 161 and 162)on the first and second side of the organic light emitting layers (Element 110). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the confinement optical resonators/cavities and waveguiding layers on the first and second side of the light emitting channel of Christensen in view of Necliudov in view of Marks as taught by Kozlov. One would have been motivated to do so since Kozlov teaches that these layers minimize waveguiding losses (see Col. 6, Liens 40-55) and form an optical cavity for resonation

yielding (see Col. 3, Lines 37-42) a device with clear threshold in the output power, a well-defined laser beam, cavity modes and narrow emission spectrum (see Col. 3, Lines 17-19).

Response to Amendment

17. The Declaration filed on 13 August 2010 under 37 CFR 1.131 is sufficient to overcome the Hepp (Phys. Rev. Lett., Vol. 91; supplied with Office action dated 2 April 2010) and Heeger (`583; supplied with Office action dated 13 July 2009) references.

Response to Arguments

18. Applicant's arguments, see Response to Amendment for Declaration under 35 CFR 1.131, filed 13 August 2010, with respect to the rejection(s) of claim(s) 1-6, 8, 12-16 and 19-28 have been fully considered and are persuasive. Therefore, the rejection of these claims has been withdrawn due to the evidence provided in the Declaration. However, upon further consideration, a new ground(s) of rejection is made in view of new discovered prior art.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

i. Papadimitrakopoulos (`550) teaches forming a single crystal type transistor and light emitter with a oligomeric Zn-bisquinoline chelate, which is capable of light emission.

ii. Holmes (`490) teaches a light emitting organic transistor (see Fig. 1 and Col. 2, Lines 55-67 through Col. 3, Lines 1-13, for example).

iii. Yahiro (JP `884) teaches an organic light emitting organic transistor configuration (see Figures).

iv. Street (Appl. Phys. Lett., Vol. 81) teaches the advantages of various locations of source/drain contacts on organic semiconductors in transistors.

v. Barbarella (J. Am. Chem. Soc., Vol. 121) teaches the electrical and optical properties of crystalline sexithiophene.

Contact Information

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Bryant can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew W. Such/
Primary Examiner, Art Unit 2891